December 1, 2005

FINDING OF NO SIGNIFICANT IMPACT

To All Interested Agencies and Public Groups:

In accordance with the environmental review guidelines of the Council on Environmental Quality at 40 Code of Federal Regulations Part 1500, the U. S. Environmental Protection Agency (EPA) has performed an Environmental Assessment (EA) of the following proposed action under the authority of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) of November 1990, House Document 646, 101st Congress (Public Law 101-646).

Project Name: Lake Borgne Shoreline Protection Project (PO-30)

Sponsors: U. S. Environmental Protection Agency, Region 6
Louisiana Department of Natural Resources

Total estimated funding	$21,294,512
Phase 1 (Engineering and Design) funding	$ 1,764,954
Phase 2 (Construction) funding	$19,529.558

Location: The proposed project is divided into two sections, Bayou Dupre' and Shell Beach, of the southern shoreline of Lake Borgne, in Pontchartrain Basin, St. Bernard Parish, Louisiana

Introduction. Maintenance dredging within the Mississippi River Gulf Outlet (MRGO) has created an unnatural water depth at the mouth of Bayou Dupre'. The objective of project PO-30 is to maintain the integrity of the narrow strip of marsh that separates Lake Borgne from the MRGO, halt direct marsh loss, restore saline marsh habitat, re-establish a sustainable lake rim, and enhance fish and wildlife habitat. Phase 1 funding for the Shell Beach portion of the project was approved on January 10, 2001, and was included in the CWPPRA 10th Priority Project List. Phase 1 funding for the Bayou Dupre' portion of the project was approved on January 16, 2002, and was included on the CWPPRA 11th Priority Project List. The Louisiana Coastal Wetlands Conservation and Restoration Task Force approved combining these projects on April 2002.

The proposed PO-30 project is part of and consistent with the Task Force, and the Wetlands Conservation and Restoration Authority ecosystem strategy to maintain shoreline integrity, dedicated dredging and beneficial use of dredged material. CWPPRA provides Federal funds for planning and implementing projects that create, protect, restore and enhance wetlands in coastal Louisiana. Under CWPPRA, the project cost is shared between the sponsoring Federal agency and the State of Louisiana, with the Federal government providing 85 percent of the project cost and the Louisiana Department of Natural Resources (LDNR) providing the remaining 15 percent.

Proposed Action. The proposed *Combination Rock Breakwaters and Steel Sheet* project would construct a continuous rock breakwater along the designated shoreline section of Lake Borgne at Bayou Dupre' and Shell Beach. A steel sheet pile structure will tie the proposed breakwater into the existing offshore U.S. Army Corps of Engineers rock breakwater along the MRGO. At Shell Beach, the proposed rock breakwater will tie into the existing rock breakwater which surrounds the perimeter of Fort Beauregard. The only opening in the breakwater will occur along the mouth of Bayou Yscloskey and across the Tennessee Gas Pipeline right-of-way. End-on-construction will be constructed along the former naval base at Shell Beach to avoid the debris in the area, and will not require flotation access because all activities will be within the footprint of the breakwater. A temporary flotation channel will be excavated along the shoreline in order to facilitate construction and maintenance of the rock breakwater. Approximately 281,461 cubic yards of spoil will be deposited on the lake side of the flotation channel and graded down into the flotation channel after construction or maintenance of the rock breakwater is complete. The design life for the proposed project is 20 years.

Finding. On the basis of the EA performed by the EPA of the proposed project, and other findings and available information, the Regional Administrator has determined that the proposed project is not a major Federal action significantly adversely affecting the quality of the human environment, and that the preparation of an Environmental Impact Statement (EIS) is not warranted. This preliminary Finding of No Significant Impact will become final 30 days after the issuance of the public notice if no new information is received to alter this finding. No administrative action will be taken on this decision during the 30-day comment period. Comments regarding this preliminary decision not to prepare an EIS, requests for copies of the EA, or review of the Administrative Record containing the information supporting this decision, may be submitted to the U.S. Environmental Protection Agency; Office of Planning and Coordination (6EN-XP); 1445 Ross Avenue, Suite 1200; Dallas, Texas 75202-2733, or by telephone at (214) 665-8150.

Responsible Official,

John Blevins
Director
Compliance Assurance
and Enforcement Division

ENVIRONMENTAL ASSESSMENT
for the
LAKE BORGNE SHORELINE PROTECTION PROJECT (PO-30)
ST. BERNARD PARISH, LOUISIANA

1.0 SUMMARY

1.1 Summary of Environmental Assessment

Project Name: Lake Borgne Shoreline Protection Project (PO-30)

Location: The proposed project has two sections, Bayou Dupre' and Shell Beach, located on the southern shoreline of Lake Borgne in the Pontchartrain Basin, St. Bernard Parish, Louisiana. The Shell Beach section extends approximately 3.2 miles between Fort Bayou and Doulluts Canal, and the Bayou Dupre' section extends approximately 1.3 miles to the west and 0.8 miles to the southeast of Bayou Dupre' (Figure 1).

Sponsors: U.S. Environmental Protection Agency (EPA), Region 6
Louisiana Department of Natural Resources (LDNR).

Total estimated funding	$21,294,512
Phase 1 (Engineering and Design) funding	$ 1,764,954
Phase 2 (Construction) funding	$19,529.558

Land rights: There are 26 landowners located within 14 tracts

Purpose and Need: To maintain the integrity of the narrow strip of marsh that separates Lake Borgne from the Mississippi River Gulf Outlet (MRGO), halt direct marsh loss, restore saline marsh habitat, re-establish a sustainable lake rim, and enhance fish and wildlife habitat. The project as proposed is consistent with the 1998 Coast 2050 Plan, Region 1 ecosystem strategy to maintain shoreline integrity, dedicated dredging and beneficial use of dredged material. The proposed project is not expected to cause adverse environmental impacts requiring compensatory mitigation.

Dredged Material: Approximately 281,461 cubic yards (cy).

Wetlands: Shell Beach - saline marsh
Bayou Dupre' - brackish and saline marsh

Threatened and Endangered Species: The threatened Gulf sturgeon and the endangered West Indian manatee may occur in the proposed project vicinity. The proposed project is not expected to adversely impact these species.

Cultural Resources: There are no known cultural or historic sites eligible to be listed on the National Register of Historic Places (NRHP) in the Bayou Dupre' project area. Fort Proctor, also known as Fort Beauregard - 16SB83, is listed on the NRHP in the Shell Beach project area. The project is not expected to adversely impact this site.

Permits and Compliance: Construction[1] of the project is authorized to begin after all applicable environmental laws and regulations are met, project plans finalized, necessary land rights acquired, permits issued[2] and approval of the Louisiana Coastal Wetlands Conservation and Restoration Task Force established by the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), Title III of Public Law 101-646. The Task Force consists of the Natural Resources Conservation Service (NRCS); the U.S. Army Corps of Engineers (ACE), National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (FWS), and the EPA. The Governor represents the State of Louisiana, with the LDNR providing the primary source of the non-Federal share of funding.

1.2 Background. Maintenance dredging within the MRGO has created an unnatural water depth at the mouth of Bayou Dupre'. In 1990, the South Lake Borgne mapping unit consisted of 16,600 acres (ac) of marsh. Between 1932 and 1990, approximately 7,300 ac of wetlands were lost in the mapping unit. Data from the Coast 2050 Plan indicates a wetland loss rate of approximately 0.33 percent per year from 1983-1990, and approximately 0.51 percent per year from 1974-1990, for the mapping unit. This loss rate includes natural and shoreline and canal erosion. Subsidence in the area is estimated at 1.1-2.0 feet (ft) per century. It is projected that about 3,310 ac of wetlands will be lost by 2050 for this mapping unit.

According to Louisiana Geological Survey data cited in the CWPPRA Restoration Plan, Lake Borgne shoreline retreat rates at Shell Beach are estimated at 15 ft per year (ft/yr). If the shoreline continues to erode at this rate, an additional 300 feet will be lost along the rim of Lake Borgne in 20 years. Bayou Dupre' is the only area where Lake Borgne and the MRGO have coalesced and, according to the 1998 Digital Orthophoto Quarter-Quadrangle (DOQQ) of the area, the opening between Lake Borgne and the MRGO is approximately 550 ft wide. If the shoreline continues to erode at this rate, the opening at Bayou Dupre' will be 2,300 feet across in 20 years.

[1] Construction is Phase 2 of the project and includes project and contract management, supervision and inspection, post-construction biological monitoring, operation, maintenance, repair, replacement, and rehabilitation and purchase of real estate.

[2] U.S. Army Corps of Engineers 404 permit for construction activities on Lake Borgne.

In August 2005, U.S. Geological Survey (USGS) revised the estimated shoreline erosion rates using the latest methodologies being utilized for CWPPRA shoreline protection projects. The new rate at Shell Beach is estimated to be 5-7 ft/yr, and 7-9 ft/yr at Bayou Dupre'. The revised rates were based on 1990 and 2004 imagery and do not reflect the effects of hurricanes Katrina and Rita. Much of the shoreline loss is associated with cold fronts.

1.3 Preferred Alternative. The preferred project alternative is the *Combination Rock Breakwaters and Steel Sheet Alternative*. The proposal would construct a nearly continuous rock breakwater along the +0.5 ft North American Vertical Datum (NAVD88) contour on designated shoreline sections of Lake Borgne at Bayou Dupre' and Shell Beach. The construction would extend approximately 17,000 ft from Doulluts Canal to Fort Bayou, 6,643 ft to the west of Bayou Dupre', and 4,418 ft to the southeast of Bayou Dupre' (Figures 2 and 3). A steel sheet pile structure will tie the proposed shoreline breakwater to the existing offshore ACE rock breakwater along the MRGO. At Shell Beach, the proposed rock breakwater will tie into the existing rock breakwater surrounding the perimeter of Fort Beauregard. The only opening in the breakwater will be along the mouth of Bayou Yscloskey and across the Tennessee Gas Pipeline right-of-way. End-on-construction, which will be used along the former naval base at Shell Beach to avoid the debris in the area, does not require flotation access since all activities will be within the breakwater footprint. A temporary flotation channel will be excavated along the shoreline to facilitate construction and maintenance of the rock breakwater. Approximately 281,461 cubic yards (cy) of spoil will be deposited on the lake side of the flotation channel and graded down into the flotation channel after construction or maintenance of the rock breakwater is complete.

1.4 Purpose and Need for Action. The purposed project is needed to halt the retreat of the Lake Borgne shoreline, the loss of marsh in the vicinity of Shell Beach and Bayou Dupre', and enhance fish and wildlife habitat. The marshes separating the MRGO from Lake Borgne are broken by many ponds and are suffering from both shoreline and bank erosion in the Shell Beach and Bayou Dupre' areas. The MRGO, with its direct connection to the Gulf of Mexico, brings high salinity water and increased tide levels and storm surges far into interior wetlands.

1.5 Project Benefits and Potential Adverse Impacts. The narrow marsh rim between MRGO and the Lake Borgne shoreline protects the communities of Shell Beach, Yscloskey, and Hopedale from direct exposure to lake wave energies and storm surge, and provides habitat for fish and wildlife. The proposed project would protect 95 ac along the Shell Beach and approximately 70 ac along the Bayou Dupre'. This acreage represents the projected loss over 20 years from shoreline retreat at a rate estimated at 10 ft/yr.[3] The proposed project will directly protect about 192 ac of wetlands and shallow water bottoms, of which 165 ac are vegetated wetlands. The reduction in the loss rate is estimated to be 100 percent over the life of the project (Table 1). Acres excavated for flotation access and channels would be 23.1 ac for Bayou Dupre' and 36.7 ac for Shell Beach. The area used for storage of dredged materials would be 8.97 ac and 20.5 ac for Bayou Dupre' and Shell Beach, respectively. The dredged flotation channel

[3] Wetland Value Assessment (WVA) - November 2005.

would be back-filled to its natural state upon completion of construction and maintenance events. The breakwater rock structure would permanently replace 2.4 ac of existing bottom habitat and the steel sheet structure would replace 0.85 ac of existing bottom habitat. Placement of the stone rock dike on land/marsh will permanently disturb 15.8 acres.

2.0 ALTERNATIVES

Three alternatives were considered, No-action, Nonstructural (such as laws, restrictions, and moratoriums), and Structural (such as siphons, weirs and dams, creative use of spoil, introduction of sediment, hydraulic filling, fixed structures, variable structures, levees, flood gates, drainage canal, and pumps). Since the nonstructural measures alone are not adequate to achieve the purpose and need of the proposed action, they were not given further consideration. The structural measures, designed to abate or reverse wetland deterioration in St. Bernard Parish, are similar to the successful structural projects that have been used to protect shoreline erosion and create marsh.

2.1 No-action Alternative. Under the No-action Alternative, the project would not be built, allowing the Shell Beach and Bayou Dupre' shorelines to continue to retreat, and facilitating the continued fragmentation of the marshes on both the lakeside and the ship channel side between the MRGO and Lake Borgne. The loss of wetlands and wildlife habitat at both of these sites would continue, changing the habitat from marsh species to open water species.

2.2 Design Alternatives. Four design alternatives were evaluated using similar criteria in the preliminary design in order to maintain a consistent comparison of the cost estimates. The original design called for an offshore breakwater which would protect existing marsh, create marsh from sediment dredged from the flotation channel, and form marsh from sediment accretion behind the offshore breakwater. Studies, however, revealed that rock could not be placed at the initially preferred alignment along the –5-ft contour, and that soils along the –2-ft contour secondary alignment would not support the weight of rock (with the exception of a few stretches) due to high settlement rates. A second investigation recommended that the riprap material be placed at the marsh edge where soil bearing capacities were more suitable and minimal settlement would occur.

All of the design alternatives used the same alignment along the approximate +0.5 foot NAVD88 contour except at the mouth of Bayou Dupre', where it traverses along the shallowest route and connects to the existing ACE breakwaters on either side. The top elevations of the alternatives were all set at +2.0 ft NAVD88. At the mouth of Bayou Dupre', the top elevation was set at the deepwater wave height of 2.5 ft NAVD88 because the bathymetry deepens as it approaches the MRGO. For those design alternatives which included rock breakwaters, the crown elevations for the initial and maintenance lifts were adjusted for the bearing load of the rock profile, the allowable bearing capacity of the soil, and preliminary settlement predictions.

2.2.1 Segmented Concrete Panel Alternative. This alternative would use 16 inch (in) by 16 in by 30 ft piles, and 21 ft panels of varying lengths depending on the topography and bathymetry used in the design. The total construction cost for this alternative is estimated to be $17.3

million, with a 15 percent contingency, and includes flotation, geotextile, scour berm, and maintenance costs.

2.2.2 Steel Sheet Pile Alternative. This alternative would use standard PZ-27 piles of varying lengths depending on the topography and bathymetry used in the design. The total construction cost for this alternative is approximately $32 million, with a 15 percent contingency, and includes 35-ft soldier piles, scour protection, flotation, and maintenance costs.

2.2.3 Rock Breakwater Alternative. This alternative would set three lifts at the mouth of Bayou Dupre', and two at a crown elevation of +4.0 foot NAVD88 and crown width of 4 ft with 2:1 side slopes to maintain adequate protection against the deep water wave action and consolidation settlement. The volume of rock required to construct the two lifts would be about 300,000 tons. The total construction cost for this alternative is approximately $14.3 million with a 15 percent contingency, and includes flotation, geotextile fabric and maintenance lifts.

2.2.4 Combination Rock Breakwaters and Fiberglass Sheet Alternative. This alternative would set the crown elevation of the breakwater at +2.0 ft NAVD88. The structure would be a back-to-back fiberglass sheet pile structure set at a crown elevation of 2.5 foot NAVD88, interconnected by tie rods, backfilled with sand to mean water level, and capped with geogrid composite and 250 pounds of class stone. Fiberglass was initially chosen for the sheet pile material because it is stronger than vinyl and more economical than steel, rock or concrete. This alternative was replaced by the steel sheet pile alternative because the structural limitations of the fiberglass sheet pile were exceeded due to changes in bathymetry resulting from Hurricane Katrina.

2.2.5 Combination Rock Breakwaters and Steel Sheet Alternative. This alternative was determined to be the preferred alternative due to the expected longevity and relatively lower construction costs. A continuous rock breakwater would be constructed along the designated shoreline section of Lake Borgne at Bayou Dupre' and Shell Beach. A steel sheet pile structure would tie the proposed breakwater into the existing offshore ACE rock breakwater along the MRGO. At Shell Beach, the proposed rock breakwater would tie into the existing rock breakwater which surrounds the perimeter of Fort Beauregard. The only opening in the breakwater would occur along the mouth of Bayou Yscloskey and across the Tennessee Gas Pipeline right-of-way. End-on-construction would be constructed along the former naval base at Shell Beach to avoid the debris in the area and would not require flotation access because all activities would be within the footprint of the breakwater. A temporary flotation channel would be excavated along the shoreline in order to facilitate construction and maintenance of the rock breakwater. Approximately 281,461 cy of spoil would be deposited on the lake side of the flotation channel and graded down into the flotation channel after construction or maintenance of the rock breakwater is complete. The design life for the proposed project is 20 years. The total construction cost for this alternative is estimated to be $11.6 million, which includes a 15 percent contingency, and includes scour protection, flotation, geogrid composite, settlement plates, warning signs, walers, tie rods, and sand backfill.

2.2.6 Additive Alternative #1. In order to avoid any adverse impacts to cultural resources located in the Bayou Dupre' area, the Additive Alternate #1 (approximately 2,000 ft of onshore

breakwater) was originally proposed at the 30 percent design level conference, but was removed from the eastern-most end of the reach (Figure 4).

2.2.7 End-On-Construction. End-on-construction would not require flotation access because all activities will be performed within the footprint of the breakwater. Equipment and materials access would be provided to the shore from flotation channels on adjacent construction reaches. Approximately 1,534 ft of rock breakwater along the former naval base located at Shell Beach would be constructed using end-on-construction in order to avoid the debris in the area.

2.5 Recommendation. Based on a comprehensive literature review, site-specific data, and project engineering and environmental reports, EPA Region 6 has determined that there are no significant adverse environmental impacts anticipated from the implementation of the *Combination Rock Breakwaters and Steel Sheet Alternative* project as proposed. This finding supports the recommendations of the CWPPRA Task Force and LDNR. The long-term protection and enhancement of the project area is expected to be beneficial to wetlands, fisheries, wildlife, recreational, and cultural resources as well as restoration of natural structural framework of the narrow strip of marsh that separates Lake Borgne from the MRGO.

3.0 AFFECTED ENVIRONMENT

3.1 Soils. Based on information in the Soil Survey of St. Bernard Parish, Louisiana, soil types present in the Shell Beach project area include Clovelly muck, between Bayou Yscloskey and Fort Bayou, and Fausse clay, primarily along the shore between Bayou Yscloskey and Doulluts Canal. The soil type in the Bayou Dupre' project area is Clovelly muck. Clovely muck is characteristic of brackish marshes and shallow open water areas flooded most of the time and wet throughout the year. It is very poorly drained, very fluid, and slightly saline organic soil. It is neutral to moderately alkaline with a pH ranging from 6.6 to 8.4. The surface layer is dark brown extending about 50 inches; the underlying layer is very fluid gray clay extending about 70 inches. Clovelly muck soil is well suited for wetland wildlife habitat and, combined with the brackish marshes and shallow open water areas, they support marine life of the Gulf of Mexico. Fausse clay is a very poorly drained, firm mineral soil found in swamps on subsided natural levees of distributaries of the Mississippi River. It is neutral to strongly alkaline, with a pH ranging from 6.1 to 9.0. The surface layer is about 5 inches thick and consists of dark grayish brown, very fluid clay in the upper part, and dark gray, firm clay in the lower part. The underlying material extends about 60 inches and is gray, firm clay. Fausse clay is used as habitat for wetland wildlife. None of the alternatives would have an impact on soils.

3.2 Water Quality. Lake Borgne is located in the Eastern Louisiana Coastal USGS Cataloging Unit 0809023. Based on the condition and vulnerability indicators[4], the overall Index of

[4] Condition indicators are designed to show existing watershed health across the country and include such things as water meeting state or tribal designated uses, contaminated sediments, ambient water quality, and wetland loss. Vulnerability indicators are designed to indicate where pollution discharges and other activities stress the watershed and could result in problems in the future. Activities in this category include such things as pollutant loads discharged in excess of permitted levels, pollution potential from urban and agricultural lands, and changes in human population levels. The more serious condition

Watershed Indicators (IWI) score is 3, which indicates Less Serious Water Quality Problems and Low Vulnerability to Stressors, which indicate aquatic conditions below State or Tribal water quality goals with problems revealed by other indicators. Watersheds with Lower Vulnerability to Stressors are watersheds where data suggest that pollutants or other stressors are low and where there is lower potential for declines in aquatic health.
303(d) Listed Waters - Under Section 303(d) of the Clean Water Act, each state must prepare a list of waters that are not meeting their water quality standards. These lists must be submitted to EPA for review and approval every April of even years (e.g. 1996, 1998). Total Maximum Daily Loads (TMDLs) are then established from the most recently approved list. For Lake Borgne, ID LA-042001-1998, the parameter of concern is pathogens. The priority for TMDL development is 5.

3.2.1 No-action Alternative. The No-action Alternative would allow the present conditions to continue, resulting in increased wave energies, greater erosion, and eventual breaching. The continued deterioration of the existing marshes could potentially contribute to an increase in turbidity and high-energy tidal surges allowing higher salinity waters into interior bay waters. The entire project area would eventually be converted to open water.

3.2.2 Combination Rock Breakwater and Steel Sheet Alternative. This alternative would have no long-term adverse impact on present conditions. However, short-term adverse impacts due to increased turbidity from the placement of the rock structure and dredging the flotation channel could occur during project construction. It is expected that turbidity levels would return to normal shortly after completion of construction. It is unlikely that this option would have any effect on pathogens.

3.3 Climate and Air Quality. Climate in the project area is subtropical and is influenced by the nearby lakes, streams, and the Gulf of Mexico which modify the relative humidity and temperatures throughout the year. Summers are long and hot with high humidity with average daily temperatures ranging from 81 degree Fahrenheit (°F) to a maximum of 90 °F. Winters are influenced by cold, dry polar air masses moving southward from Canada, with the average daily temperatures ranging from 53 °F to a minimum of 43 °F. Annual precipitation averages 55 inches. The area is subject to frequent tropical storms and hurricanes.

St. Bernard Parish is currently classified in attainment for all National Ambient Air Quality Standards (NAAQS) and the air quality is good. National and state ambient air quality standards for specific criteria pollutants were developed to protect pubic health, safety, and welfare as a result of the Federal Clean Air Act (CAA) of 1970. The CAA Amendments of 1990 mandated a program to improve air quality and maintained the NAAQS. This program involves ongoing monitoring and reporting from which regions are classified as to their attainment status with regard to each criteria pollutant.

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indicator for this watershed is the Wetland Loss Index. The three vulnerability indicators identified as more serious are Wetland Aquatic Species at Risk, Urban Runoff Potential, and Estuarine Pollution Susceptibility Index.

3.3.1 No-action Alternative. This alternative would have no impact on present air quality conditions.

3.3.2 Combination Rock Breakwater and Steel Sheet Alternative. This alternative would have no long-term adverse impact on present conditions. Minor temporary impacts due to emissions from dredging equipment could occur during construction. It is expected that exhaust emissions from dredging equipment would be limited to the construction phase of the project, but would be quickly dissipated by prevailing winds. The total volatile organic compound emissions for his project during construction is anticipated to be well below the de minimis level of 100 tons per year. Therefore, this option conforms to the Louisiana State Implementation Plan.

3.4 Wetland. Between 1932 and 1990, approximately 7,300 acres of wetlands were lost in the South Lake Borgne mapping unit. From 1983-1990, data from the Coast 2050 Plan for the South Lake Borgne mapping unit indicates a wetland loss rate of approximately 0.33 percent per year, and approximately 0.51 percent per year from 1974-1990. This loss rate includes natural loss and losses due to shoreline and canal erosion. In 1990, this mapping unit consisted of 16,600 acres of marsh. Subsidence in the area is estimated at 1.1-2.0 ft per century. It is projected that about 3,310 acres of wetlands will be lost by 2050 for this mapping unit.

Lake Borgne shoreline retreat rates at Shell Beach are estimated at 15 ft/yr according to Louisiana Geological Survey data cited in the CWPPRA Restoration Plan. The narrow strip of marsh between Lake Borgne and the MRGO in the vicinity of Bayou Dupre' is disappearing. In fact, this is the only area in which Lake Borgne and the MRGO have coalesced. The opening between the Lake and the MRGO is estimated to be approximately 550 feet wide as measured on the 1998 DOQQ of the area. Assuming the shoreline continues to erode at the historical rate, the opening at Bayou Dupre' will be 2,300 feet across in 20 years.

In August 2005, USGS revised its estimates of shoreline erosion rates using the latest methodologies currently being utilized for all CWPPRA shoreline protection projects. The shoreline erosion rates at Shell Beach are now estimated at 5-7 ft/yr, and 7-9 ft ft/yr at Bayou Dupre'. Much of this shoreline loss is associated with cold fronts. The revised shoreline erosion rates were based on 1990 and 2004 imagery and do not reflect the effects of hurricanes Katrina and Rita.

3.4.1 No-action Alternative. Common plant species observed in the area include: *Spartina alterniflora*, *Spartina patens*, *Spartina cynosuroides*, *Phragmites australis*, *Distichlis spicata*, and I*va frutescens.* Without the protection of the breakwaters, the vegetated marshes will be converted to open water.

3.4.2 Combination Rock Breakwater and Steel Sheet Alternative. Implementation of the proposed action, shoreline erosion and wetland loss and protect 165 acres of vegetated marsh over the 20-year life of the project.

3.5 Wildlife and Fisheries. The proposed project sites border two mapping units in Region 1 of the 1998 Coast 2050 Plan, South Lake Borgne mapping unit and the Lake Borgne mapping unit. For the South Lake Borgne mapping unit, the area covered in this unit is important to many

species of wildlife and fishes, including migratory and resident waterfowl, wading and water birds, furbearers, shellfish, and many recreational and commercial species of fish. The Federally listed Gulf of Mexico sturgeon has been reported in Lake Borgne and the Federally listed endangered brown pelican can be commonly found foraging and resting throughout this unit. Lake Borgne is particularly important as the site of some of Louisiana's prime oyster grounds. The lake supports an estuarine assemblage of fishes. Red drum, spotted sea trout, blue crab, brown shrimp, and white shrimp are commercially important species found in the lake.

Populations of red drum, black drum, spotted sea trout, Gulf menhaden, southern flounder, American oyster, white shrimp, brown shrimp, blue crab, and Spanish mackerel have been steady for the last 10-20 years. Gulf menhaden and Spanish mackerel populations are expected to remain steady through 2050, while the others are expected to decline. Populations of seabirds, wading birds, shorebirds, raptors, and marsh resident and migrant birds have been steady for the last 10-20 years but are projected to decline through the year 2050. Furbearer and American alligator populations have declined over the last 10-20 years and are expected to do so through 2050. Brown pelican populations have increased in the recent past and are expected to do so through 2050.

Most of the estuarine species spawn offshore, and the larvae migrate either freely or by currents into the estuarine marshes. Once inshore, the larvae reside in the saline, intermediate, or brackish marshes, depending on the species' salinity tolerance and food availability. The interface between the marsh and the water's edge creates a habitat where larval and juvenile fishes can find cover, food, and favorable environmental conditions (water depth, temperature, dissolved oxygen, current speed, and turbidity). The interior marsh provides a stable habitat that resists fluctuating water levels, salinity, temperature, and water movement.

This stable nursery habitat allows species to maintain their position in the estuary until they become adults. The larvae of many species that spawn during the fall and winter months remain in the estuary throughout the spring and summer months. During the warmer months, larval and juvenile fish and shellfish species experience the most rapid growth. The marshes are critical to the successful completion of the life cycle of these species. Additionally, the detritus provided by these marshes forms the basis of the food chain for many fish and shellfish species. The shallow estuarine open water habitat along Lake Borgne and the MRGO provide an interior habitat essential to fish, shellfish, and wildlife species. This area represents the nursery habitat for estuarine-dependent species, which utilize shallow open water for nursery grounds. Fish species such as menhaden favor shallow open water to flooded marsh for nursery grounds in their larval and juvenile life stages. Much of the shallow estuarine open water offers refuge to fish, crabs, and shrimp when the water level drops causing these species to retreat from the flooded marsh to the remaining open water.

Many of the shallow estuarine ponds are isolated from adjacent water bodies. These ponds resist the fluctuating water levels, salinity, and temperature reflected in the adjacent water body. The salinity and temperature extremes experienced in isolated ponds, due to evaporation, rainfall, and sun radiation, however, may be much greater than those experienced by ponds which are connected to the adjacent water bodies by small natural marsh channels.

Salinity. Historically, salinities in the project area were such that brackish marsh was the dominant habitat type. Since construction of the MRGO, these marshes have been subject to increased salinity due to the channel's direct connection to saline marine waters. An average annual salinity of 10 part per trillion (ppt) was utilized in the 1997 and 1999 WVAs for this project. Measurements taken at the project site in June 2000 indicated a salinity of 19 ppt. As project features of this project do not propose any salinity attenuation effect, here should be no change from the baseline condition with or without the project.

The MRGO channel has created an increase in the number of access points into the marshes for estuarine species. The access increase into the salt marsh habitat has benefited estuarine species, but the conversion of brackish and saline marsh to open water has reduced the amount of estuarine nursery habitat. Many larval fish and shellfish species travel this corridor from the Gulf of Mexico to the interior marsh habitats.

Water movement, from tidal fluctuation and ship wakes, has caused erosion along the banks of the MRGO. Bank erosion along the north bank of the MRGO has increased the number of shallow estuarine marsh ponds, further increasing the width of the channel. Interior marsh breakup is a result of increased water movement and subsidence. As the interior marsh breaks up, the amount of edge habitat available to estuarine species increases. However, as the breakup converts the interior marsh to open water, estuarine marsh habitat declines.

3.5.1 The No-action Alternative. The No-action Alternative may not pose an eminent danger to the fish and wildlife resources in the area, as construction would not take place. There is a continual prolonged risk as the shoreline continues to recede and the marsh and wetland habitat continues to degrade. As interior marsh habitat decreases to open water over time, species would change.

3.5.2 Combination Rock Breakwater and Steel Sheet Alternative. The shoreline protection is expected to preserve the marshland and areas of intertidal emergent vegetation. The wetlands protected would provide a diversity of habitat foraging, breeding, spawning, and cover habitat for a greater variety of adult and juvenile fisheries. Nutrients and detritus would be added to the existing food web, providing a positive benefit to local area fisheries. According to NOAA, access features such as fish dips would not be necessary even though a revetment would change the type of edge habitat, it would not necessarily restrict fish access behind it

3.6 Essential Fish Habitat (EFH). Project evaluation included an examination of habitat considered to be essential for fisheries as established under the provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), intended to promote the protection, conservation, and enhancement of essential fish habitat (EFH). The MSFCMA defines EFH as those waters and substrates necessary to federally managed fish species for spawning, breeding, feeding or growth to maturity of specific species depending upon life stage (Table 3). Primary categories of EFH in the project vicinity include marsh edge, inner marsh, mud bottoms and oyster reef in Lake Borgne. Specifically, brown and white shrimps in the postlarvae, juvenile and sub-adult life stage, as well as the white shrimp adults, inhabit marsh edge, submerged aquatic vegetation (SAV), marsh ponds, and inner marsh. The brown shrimp

sub-adults live in estuarine mud bottoms and marsh edge. Red drum in the post-larvae/juvenile life stage inhabits SAV, estuarine mud bottoms and the interface between marsh and water. The sub-adults of the species live in estuarine mud bottoms and oyster reefs (Table 2). All portions of the proposed project area have been identified as EFH for various life stages of white and brown shrimp and red drum.

3.6.1 The No-Action Alternative. Under the No-action Alternative, the proposed action would not be built. Without the protection of the breakwaters, the salt marsh would continue to erode. EFH will decrease over time, resulting in the decline in fisheries.

3.6.2 Combination Rock Breakwater and Steel Sheet Alternative. The shoreline protection is expected to preserve the marshland and areas of inter-tidal emergent vegetation by 100 percent. The protected wetlands would provide a diversity of habitat foraging, breeding, spawning, and cover habitat for a greater variety of adult and juvenile fisheries. Nutrients and detritus would be added to the existing food web, providing a positive benefit to local area fisheries. Inclusions of fish dip openings will not be needed to facilitate fish access and water exchange.

3.7 Threatened and Endangered Species. The two species of concern in the area are the endangered West Indian manatee (*Trichechus nanatus*) and the threatened Gulf sturgeon (*Acipenser oxyrhynchus desotoi*). Manatees have been sighted within the MRGO, and are known to travel long distances up coastal waterways from the Gulf of Mexico. On July 9, 2001, a manatee was observed passing safely through the Inner Harbor Canal Navigation Lock and into the Mississippi River. Manatees are usually within Louisiana coastal waterways only during the warm weather/warm water months. The Biological Assessment (BA), *"Impacts of Navigational Channel Dredging on the Gulf Sturgeon"*, dated March 15, 2001, report that no recent catches or sightings of Gulf sturgeon within the MRGO have been found in available resources. The Louisiana Department of Wildlife and Fisheries conducted studies in Louisiana coastal waters from 1990 to 1993. Reports of incidental catches and sightings of sturgeon show that Gulf sturgeon exists within several coastal waterways in southeast Louisiana, including Lake Borgne.

On March 19, 2003, the FWS and NOAA Fisheries published a final rule in the Federal Register (Volume 68, No. 53) designating critical habitat for the Gulf sturgeon in Louisiana, Mississippi, Alabama, and Florida. Portions of the Pearl and Bogue Chitto Rivers, Lake Pontchartrain east of the Lake Pontchartrain Causeway, all of Little Lake, The Rigolets, Lake St. Catherine, and Lake Borgne within Louisiana were included in that designation. The primary constituent elements essential for the conservation of Gulf sturgeon are those habitat components that support feeding, resting, sheltering, reproduction, migration, and physical features necessary for maintaining the natural processes and include:

- abundant prey items within riverine habitats;
- riverine spawning sites;
- riverine aggregation areas, also referred to as resting, holding and staging areas;
- a flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of fresh water discharge over time);
- water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and

other chemical characteristics;
- sediment quality, including texture and other chemical characteristics; and
- safe and unobstructed migratory pathways (e.g., a river unobstructed by a permanent structure, or a dammed river that still allows for passage).

The manatee population has declined in number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution. Cold weather and outbreaks of red tide may also adversely affect these mammals. For the gulf sturgeon, habitat alterations caused by water control structures that limit and sometimes prevent spawning, create poor quality water, and lead to over-fishing have negatively affected the population of this species. There is potential for manatees and sturgeon to be within the vicinity of the proposed project.

3.7.1 The No-action Alternative. Under the No-action Alternative, the proposed action would not be built. Without the protection of the breakwaters the vegetative marsh would continue to erode, and habitat will decrease over time.

3.7.2 Combination Rock Breakwater and Steel Sheet Alternative. Implementation of the proposed project is not likely to adversely impact the West Indian manatee or the Gulf sturgeon. Halting the loss of vegetative marsh would likely protect the available habitat for these species. Construction will be done within the guidelines set forth by the FWS and the LDWF to insure protection of critical habitat and protection of these species.

West Indian Manatee. The primary potential impact to the West Indian manatees would include possible collision with service vessels and noise in the water from the dredge operation or service vessels. The dredge and service vessels world be required to have a qualified observer on board to sight the manatees while in transit so the manatees or other marine mammals could be avoided. No collision fatalities are expected and the proposed project is expected to have negligible adverse effect on the West Indian manatee.

Gulf sturgeon. The shoreline protection project is expected to preserve marsh land and areas of intertidal emergent vegetation. The protected wetlands would continue to provide a diversity of habitat. This alternative will not impact enough habitat to adversely modify critical habitat to the extent it would jeopardize the Gulf sturgeon. To reduce any risk to the Gulf sturgeon to a minimum, habitat alteration during construction should be minimized to the greatest extent possible.

3.8 Recreation. Recreation in the area is generally oriented towards hunting and fishing. The natural and recreational resources of the project area provide wide and varied opportunities for outdoor enjoyment. Recreational activities taking place in the MRGO, Lake Borgne and adjacent marshes, may include boating, hunting, fishing and natural and cultural study. The project area is an area of vital importance as a fishery nursery ground, waterfowl wintering and hunting area. Recreational fishing is by far the most popular activity in the management area because of the access to water bodies, bayous, and the marsh. Small game hunting is also popular due to the abundance of habitat and the wide range of species available to the hunter.

3.8.1 No-action Alternative. Recreational use within the project area would continue at its present level. The marshes surrounding the project area provide numerous areas for hunting and fishing opportunities. However, over time these marshes would erode and subside, converting to open-water areas. Continued marsh loss translates into less edge and estuarine marsh habitat available to fish. Lost nursery and breeding grounds translate into less productive fishing in the future.

3.8.2 Combination Rock Breakwater and Steel Sheet Alternative. The recreational environment in and around the project area would experience limited short-term disruption imposed by the physical size and working activities of the floating dredge facility and barge traffic. Dredging activities associated with construction of the flotation channels would increase turbidity in the area of work and in the vicinity of the discharge pipes. This turbidity may disrupt water-oriented recreational activity occurring within the vicinity; however, these adverse impacts would be temporary and short-lived. Positive long-term benefits would be the sustainability of the marsh. This marsh and vegetation would provide shelter and habitat for wildlife. The rock dike construction will reduce further bank erosion, and create areas for fish habitat, breeding and feeding areas.

4.0 OTHER ENVIRONMENTAL CONSIDERATIONS

4.1 Oyster Leases. There are six oyster leases in the project area, which encompasses 338 acres (Figures 2 and 3). The leases have a lease value of $91,200 and a standing crop value of $147,959, for a total value of $239,159. The state is currently evaluating its oyster lease policy. No construction will take place until there is a resolution between the State and lease owners.

4.2 Cultural Resources. Letters dated June 25, 2001, and June 19, 2002, were received from the State of Louisiana, Department of Culture, Recreation & Tourism, Office of Cultural Development, Division of Archaeology, State Historic Preservation Officer (SHPO), identifying three recorded archaeological sites (16SB83, 16SB43 and 16SB44) located in the Shell Beach area and six sites (SB85, SB71, SB148, SB40, SB39, and SB140) located in the Bayou Dupre' area, respectively. Site 16SB83, Fort Proctor (also known as Fort Beauregard), is listed on the NRHP. The NRHP eligibility of sites 16SB43, located outside of the area of potential effect (APE) and 16SB44 was unknown. Based on aerial photographs taken after hurricane Katrina, SB85, Martello Castle is a pile of rubble and was not assessed for NRHP eligibility. Sites SB71 and SB148 were determined to be ineligible for NRHP listing. Sites SB39, SB40 and SB140 were identified as eligible for listing on the NRHP. However, site SB140 is located outside of the APE. Human remains had been encountered at site SB39.

A Phase I Terrestrial and Submerged Cultural Resources Survey was conducted to document and assess cultural resources (archaeological sites and standing structures) within the project's APE. The investigation located a single new archaeological site (SB154) and documented standing structures at site SB44. Because of this survey, two sites SB40 and SB44 were assessed as not meeting the eligibility criteria for listing on the NHRP. Sites SB39 and SB154, however, were assessed as meeting the NHRP eligibility criteria. SHPO agreed with the

survey findings in their letter of August 20, 2004, to LDNR. The Additive Alternate #1 presented at the August 2005 30 percent design conference, and as shown on the 30 percent level plans was deleted from the eastern-most end of the reach. By maintaining a sufficient buffer distance from these areas (SB39 and SB154), any impacts due to the construction of this project will be avoided.

4.3 Socio-economics and Environmental Justice. In accordance with Executive Order 12898 on Environmental Justice (EJ), a basic EJ analysis was performed to develop an EJ index for the proposed project. The analysis is based on the percentage of minority people, the percentage of economically distressed households earning less than $15,000 per year, and the population within a one-half and four mile radius of the site in comparison with the percentage from the state. The EJ index indicators range from 1 where the factors affecting minorities are considered to be in balance when compared to the state average, to 100 where the minorities are considered to be grossly unbalanced when compared to the state average. For Shell Beach, the index for the 1 square mile area was calculated to be "0" and for the 50 square mile area calculated to be "6". For Bayou Dupre', the index for the 1 square mile area was calculated to be "0" and for the 50 square mile area calculated to be "1". The analysis was conducted prior to hurricanes Katrina and Rita when there were approximately 528 people living within a 50 mile radius of the proposed Shell Beach project site, and approximately 2,766 people for Bayou Dupre'.

4.4 Coastal Zone Management, Prime Farmlands, and Floodplains

4.4.1 Coastal Zone Management (CZM). In order to comply with CZM requirements, the project will need a Coastal Use Permit (CUP) prior to construction, which is issued by the LDNR. Applications for the CUP and ACE 404 permits have been submitted. A Joint Public Notice for both permits will be issued upon completion of this EA.

4.4.2 Floodplains. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps delineate the 100-year Special Flood Hazard Areas, designated "A" or "V" zones. A-zone Special Flood Hazard Areas are areas that have a 1 percent chance of experiencing a 100-year level flood in any given year. Coastal zone areas are designated "V" zones in which structures are subject to damage from both flooding and significant wave action. According to FEMA, the proposed project is designated to be in a "V" zone area. This area is subject to wind and wave action along with flooding. It does not appear that the proposed project would have a negative affect on the floodplain.

4.4.3 Prime Farmland/Overgrazing. According to the Natural Resources Conservation Service (NRCS), it does not appear that this proposed project will impact any of their work in the vicinity. Further, it is not believed that the project will have an adverse effect on the surrounding environment when completed if appropriate erosion control measures are taken during construction. No prime, unique, or statewide important farmlands will be impacted. NRCS also states that there are no livestock currently grazing in the area, nor a potential for grazing once the project is installed and overgrazing is considered to be a problem for the project area.

4.5 Hazardous, Toxic, and Radioactive Waste (HTRW). HTRW activities include those activities undertaken for the EPA's Superfund program, the Defense Environmental Restoration Program, including Formerly Used Defense Sites (FUDS) and Installation Restoration Program sites at active Department of Defense facilities, HTRW actions associated with Civil Works projects, and any other mission or non-mission work performed for others at HTRW sites. For the purposes of Unexploded Ordnance (UXO) support, HTRW activities during the investigative/design phase of HTRW project on a site with known or UXO with unknown fillers require anomaly avoidance procedures. HTRW activities during the remedial action phase (construction) of HTRW project on a site with known or UXO with unknown fillers may require either standby support or subsurface removal.

Shell Beach was an anti-aircraft gunnery range used during World War II (Figure 5), generally located at 29° 52' 01" north latitude and 89° 40' 01" west longitude. These ranges were oriented to fire out over the water at aerial targets towed by a tow aircraft. The inventory property report for this property lists it as an eligible Formerly Used Defense Sites (FUDS) property Number A06LA0323, but no hazards were found and the site is considered complete, no further action to be taken. The limit for an eligible ordnance project along a shoreline is 100 years from the high tide line. Any ordnance at this property would be located in the water beyond the current limit of 100 years, which makes any project ineligible. End-on-construction along this former naval base will ensure avoidance of the debris in the area.

4.6 Cumulative Impacts. Potential cumulative impacts would be the aggregate impacts to the environment resulting from the proposed action in combination with other ongoing actions, and actions being considered within the reasonably foreseeable future. The proposed action is part of an effort under CWPPRA to create, protect, restore and enhance wetlands in coastal Louisiana. CWPPRA provides Federal funds for planning and implementing of such projects. ACE has two infrastructure projects inside or bordering the South Lake Borgne mapping unit. Bayous La Loutre, St. Malo, and Yscloskey were improved to provide a navigation channel from Bayou St. Malo to Hopedale. The MRGO, a navigation channel from New Orleans to the Gulf of Mexico, was constructed as well. There are no roads or railroads, about 17 miles of pipelines, and 12 oil and/or gas wells in this unit. The Lake Borgne mapping unit, there are no major Federal, State, or parish infrastructure or any roads, railroads, or pipelines. There are 61 oil and/or natural gas wells and one industrial groundwater intake in this unit.

The MRGO, constructed in 1963, has drastically changed the landscape of the St. Bernard Parish wetlands not only by its large foot print, which eliminated thousands of acres of wetlands, but also by altering salinity and tidal regimes. For now, relatively little is being done to address the ongoing degradation caused by the MRGO. Future MRGO closure/modification decision will take years. A limited amount of rock-buttressed dredged spoil has been used in the past to protect small portions of the highly vulnerable channel shore, and speed restrictions have been proposed to reduce wake erosion. The proposed action is expected to have long-term beneficial cumulative impacts. Protecting wetlands within the proposed project areas benefits the significant resources described in the EA. Protecting the shorelines and wetlands between Lake Borgne and the MRGO would sustain valuable breeding, nesting, foraging, and cover habitat for a variety of fisheries and wildlife species. The new result would be sustaining bio-

diversity and productivity. The ACE is proposed to place a rock breakwater (18,820 linear feet) along the southern shore of Lake Borgne starting at the east bank of Doullut's Canal and proceeding east to the south bank of Jahncke's Ditch and to construct a 14,360 linear-foot rock breakwater along the north bank of the MRGO starting at the east bank of Doullut's Canal and proceeding east to the west bank of the mouth of Lena Lagoon. These projects will include flotation channels to be dredged parallel to and toward the waterside of the rock breakwaters as needed.

4.7 Unavoidable Adverse Effects. The primary unavoidable adverse effects are the immediate impacts from construction related sediment excavation and deposition on the non-mobile benthic organisms in areas adjacent to specific project features, minor and temporary disturbance to adjacent wetlands, water and air quality. The effects on air quality and the noise generated by the proposed project will be of a temporary nature.

4.8 Relationship between Local, Short Term Use of the Environment and the Maintenance/Enhancement of Long Term Beneficial Uses. All structural and non-structural alternatives have short-term localized impacts during construction; yet offer highly significant long-term environmental benefits. The proposed project is a protection of shoreline action and would protect approximately 95 ac of emergent marsh from direct loss due to Lake Borgne shoreline retreat from Doulluts Canal to Fort Bayou. For Bayou Durpe', the proposed project would protect 70 ac of existing emergent marsh and prevent further coalescence of Lake Borgne with the MRGO resulting from the shoreline erosion of Lake Borgne.

4.9 Irreversible and Irretrievable Commitment of Resources. The irreversible and irretrievable committed resources would be labor, materials, wear on machinery, monies spent, and energy expended for implementation of the restoration action.

5.0 PROPOSED MITIGATION

5.1 Mitigation Criteria. The following mitigations will be necessary to ensure environmental protection, consistent environmental policy, and safety as required by the NEPA, or are recommended measures needed for compliance with 40 CFR 1500.2(f) regarding the requirement for Federal agencies to avoid or minimize adverse effects of their actions upon the quality of the human environment.

5.2 Protection vegetation. Access to or movement across the strip of marsh outside the defined project area shall generally be prohibited within vegetated areas for all personnel and equipment to protect existing vegetation. Vegetated areas shall not be used for equipment, personnel or material access or storage. The dredged fill shall be discharged within the designated areas in a manner that will minimize overflow of the dredged material from the bounds of its placement area.

5.3 FWS 100-yard buffer zone. All contract personnel associated with the project will be informed of the potential presence of manatees and the need to avoid collisions with manatees, which are protected under the Marine Mammal Protection Act of 1972 and the Endangered

Species Act of 1973. All construction personnel are responsible for observing water-related activities for the presence of manatee(s). Temporary signs will be posted prior to and during all construction/dredging activities to remind personnel to be observant for manatees or within vessel movement zones. At least one sign will be placed where it is visible to vessel operators. Siltation barriers, if used, will be made of material that will not entangle manatees, and will be properly secured and monitored. If a manatee is sighted within 100 yards of the active work zone, special operating conditions will be implemented, including: no operation of moving equipment within 50 feet of a manatee; all vessels will operate at no wake/idle speeds within 100 yards of the work area; and siltation barriers, if used, will be re-secured and monitored. Special operating conditions are no longer necessary once the manatee has left the 100-yard buffer zone around the work area on its own accord, but careful observations would be resumed. Any manatee sighting will be immediately reported to the FWS and the LDWF Natural Heritage Program.

5.4 Summer dredging windows. During the winter months, juvenile and adult Gulf sturgeon use estuarine and marine habitats for foraging activities. Sturgeon migrate to river mouths and upstream areas during the spring in search of spawning and resting habitat. They migrate back into the estuaries and marine habitats in the fall season in search of suitable benthic prey species, their primary source of food. To avoid impacts to the sturgeon during the fall and spring migrations all contract personnel will observe summer dredging windows and dredge from May 1st through September 30th only.

All contract personnel associated with the project will be informed of the potential presence of the Gulf sturgeon and take action to induce them to leave the immediate work area prior to dredging, regardless of water depth or time of year. If Gulf sturgeons are sighted, no dredging will be initiated until they have left the work area.. During the no-dredging period, personnel will carefully observe the work area for presence of the Gulf sturgeon. If water turbidity makes such visual observations impossible, dredging work will proceed after the one-minute no-dredging period.

6.0 CONSULTATION AND PUBLIC PARTICIPATION

Public involvement including input from the public, local, State, Tribal and Federal agencies is achieved through the Citizen Participation Group, and public meetings conducted during the project development and selection stages under CWPPRA. The project concept was originally proposed to the public at a nomination meeting held in 2000. An overview of the selected project was presented to the public in 2001. St. Bernard Parish was kept updated as project engineering and design progressed.

The public recognizes that the continued loss of coastal wetlands can ultimately result in the displacement of entire communities, the loss of occupational and recreational opportunities, and ultimately, the forfeiture of a unique culture and way of life. Passage of the Louisiana constitutional amendment establishing the Coastal Wetlands Conservation and Restoration Fund clearly overwhelmingly demonstrated public's overwhelming support to effectively address the

State's coastal land loss problem. This statutorily dedicated fund has provided a State funding mechanism for cost sharing this project.

Coordination has been maintained with each of the CWPPRA Task Force agencies and the LDNR. Consultation has been conducted with the FWS and LDWF, in accordance with the Endangered Species Act of 1973 and Fish and Wildlife Coordination Act. The EA has been prepared in coordination with the NMFS in determining categories of EFH and associated fisheries species within the project vicinity. Submittal of the EA is provided to initiate formal Federal consultation requirements pertaining to EFH under the MSFCMA. Federal, State, Tribal and local agencies, as well as other interested stakeholders, will receive a copy of this EA. Consultation has also been conducted with the Louisiana Department of Culture, Recreation and Tourism, State Historic Preservation Officer (SHPO) in accordance with the National Historic Preservation Act of 1966, and Archaeological and Historic Preservation Act of 1974. Since 2003, consultation has been conducted with the Chitimacha Tribe of Louisiana and the Mississippi Band of Choctaw tribes concerning two archeological sites, SB39 and SB154, known to contain human remains of the Mississippi Band of Choctaw and/or Chitimacha Tribe of Louisiana. Responses from the respective agencies with regard to the proposed action are included in Section 7.0.

U.S. Department of Agriculture, Natural Resources Conservation Service
U.S. Army Corps of Engineers
U.S. National Marine Fisheries Service
U.S. Fish and Wildlife Service
Federal Emergency Management Agency
State Historic Preservation Officer
Louisiana Department of Environmental Quality
Louisiana Department of Natural Resources
Louisiana Department of Wildlife and Fisheries
National Audubon Society
St. Bernard Parish Consolidated Government
Chitimacha Tribe of Louisiana
Mississippi Band of Choctaw

7.0 TABLES, MAPS, FIGURES, COMMENT LETTERS AND E-MAILS

Table 1 - Lake Borgne Shoreline Protection Project (PO-30) Habitat Analysis at TY0 and TY20

	Bayou Dupre' West	Bayou Dupre' East	Shell Beach	Bayou Dupre' and Shell Beach	Bayou Dupre' and Shell Beach	Bayou Dupre' and Shell Beach
	Acres TY0	Acres TY0	Acres TY0	Total Acres TY0 Existing Condition	Total Acres TY20 Future w/Project	Total Acres TY20 Future wo/Project
marsh	47	23	94	164	164	0
wetland shrub scrub			1	1	1	0
marsh water	6	5	16	27	27	192
Total	53	28	111	192	192	192

Wetland Value Assessment (WVA) - November 2005

Table 2 - Summary of EFH Requirements or Species Managed by the Gulf of Mexico Management Council

Species	Life Stage	System	EFH
Brown shrimp	eggs	Marine (M)	<110 m, demersal
	larvae	M	<110 m, planktonic
EFH: Apalachicola	postlarvae/juvenile	Estuarine (E)	marsh edge, SAV, tidal creeks, inner marsh,
Bay to Mex.	subadults	E	mud bottoms, marsh edge
	adults	M	<110 m, silt sand, muddy sand
White shrimp	eggs	M	<40 m, demersal
	larvae	M	<40 m, planktonic
EFH: Suwannee River	postlarvae/juvenile	E	marsh edge, SAV, marsh ponds, inner marsh, oyster reefs
to Mex.	subadults	E	same as above
	adults	M	<33 m, silt, soft mud
Pink shrimp	eggs	M	<65 m, demersal
	larvae	M	<65 m, planktonic
EFH: Fla.	postlarvae/juvenile	E	SAV, sand/shell substrate
	subadults	E	SAV, sand/shell substrate
	adults	M	<65 m, sand/shell substrate
Royal red shrimp	adults	M	250 – 500m, terrigenous silt and silty sand & calcareous
EFH: NE Gulf of Mex.			mud
Red drum	eggs	M	planktonic
	larvae	M	planktonic
EFH: Fla. to Tex.	postlarvae/juvenile	M/E	SAV, estuarine mud bottoms, marsh/water interface
	subadults	E	mud bottoms, oyster reefs
	adults	M/E	Gulf of Mexico & estuarine mud bottoms, oyster reef
Red grouper	eggs	M	planktonic, 25 – 50 m
EFH: Eastern Gulf of	juvenile	M	hard bottoms, SAV, reefs
Mex. (W. Fla. Shelf)	adults	M	reefs, ledges, outcrops
Black grouper	juvenile	M/E	FL estuaries & Gulf of Mexico
EFH: E. Gulf of Mex.	adults	M	rocky coral reefs to 150 m
Gag grouper	eggs	M	planktonic
EFH: E. Gulf of Mex.	juvenile	M/E	SAV & oyster beds in coastal lagoons and estuaries
	adults	M	hard bottoms, reefs, coral; 10 – 100 m
Scamp	juvenile	M	hard bottoms, reefs; 12 – 33 m
EFH: E Gulf of Mex.	adults	M	hard bottoms; 12 – 189 m
Red snapper	larvae	M	structure, sand/mud; 17-183 m
EFH: Fla. to Tex.	postlarvae/juvenile	M	structure, sand/mud; 17-1183 m
	adults	M	reefs, rock outcrops, gravel; 7 – 146 m
Vermilion snapper	juvenile	M	reeds, hard bottom, 20 – 200 m
EFH: Fla. to Tex.			
Gray snapper	larvae	M	planktonic
EFH: E Gulf of Mex.	postlarvae/juvenile	E	SAV, mangrove, mud
	adults	M/E	SAV, mangrove, sand, mud

Yellowtail snapper EFH: E Gulf of Mex.	juvenile adults	M/E M	SAV, mangrove, sand, mud reefs
Lane snapper EFH: Fla. and Tex.	juvenile adults	M/E M	SAV, mangrove, sand, mud reefs, sand, 40 132 m
Greater amberjack EFH: Fla. to Tex.	juvenile adults	M M	floating plants (Sargassum), debris pelagic over reefs/wrecks
Lesser amberjack EFH: Fla. to Tex.	juvenile adults	M M	floating plants (Sargassum), debris oil rigs, irregular bottom features
Tilefish EFH: Fla. to Tex.	juvenile adults	M M	burrows rough bottom, 250 – 350 m
Gray triggerfish EFH: Fla & La./Tex. Shelves	eggs larvae postlarvae/juvenile adults	M M M M	sand floating plants (Sargassum), debris floating plants (Sargassum), debris, mangrove reefs, >10 m
King macherel EFH: Fla. & La./Tex. Shelves	juvenile adults	M M	pelagic pelagic
Spanish mackerel EFH: Fla. to Tex.	larvae juvenile adults	M M/E M	<50 m isobath offshore, beach, estuarine pelagic
Cobia EFH: Fla. to Tex.	eggs larvae postlarvae/juvenile adults	M M/E M M	pelagic estuarine & shelf estuarine & shelf estuarine & shelf
Dolphin EFH: Fla. to Tex.	larvae postlarvae/juvenile adults	M M M	epipelagic epipelagic epipelagic
Bluefish EFH: Fla to Tex.	postlarvae/juvenile adults	M/E M/E	beaches, estuaries, inlets gulf and estuaries, pelagic
Little tunny EFH: Fla to Tex.	postlarvae/juvenile adults	M M	coastal & shelf, pelagic coastal & shelf, pelagic
Stone crab EFH: Fla. estuaries & nearshore waters	larvae juvenile adults	M/E M/E M/E	planktonic, moderate-high salinity shell, SAV shell, FAV, coal
Spiny lobster EFH: E Gulf of Mex.	larvae juvenile adults	M M M	algae, SAV sponge, coral hard bottoms, crevices
Coral	All stages	M	Flower Gardens, Fla. Middle Grounds

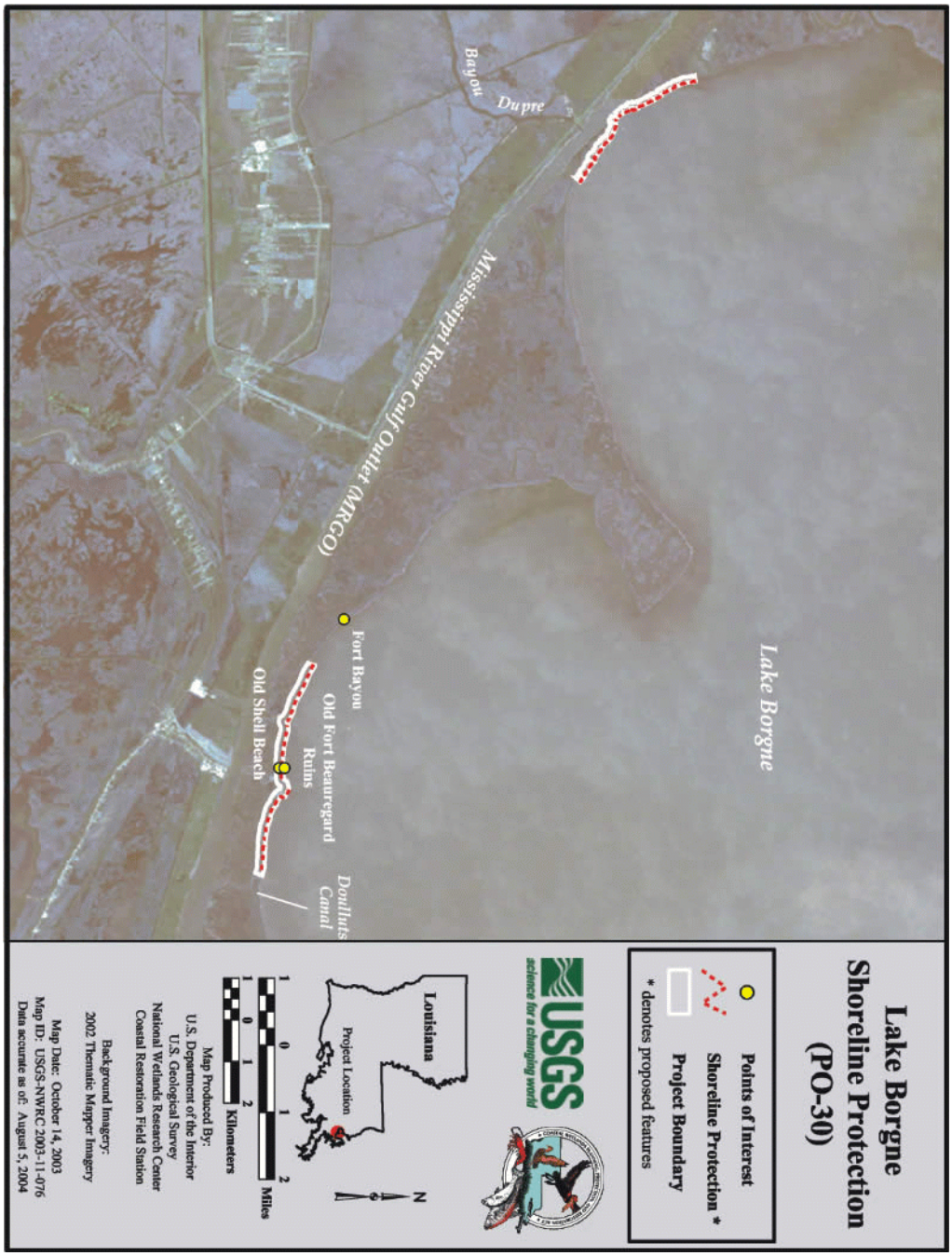


Figure 1 - Project Location Map

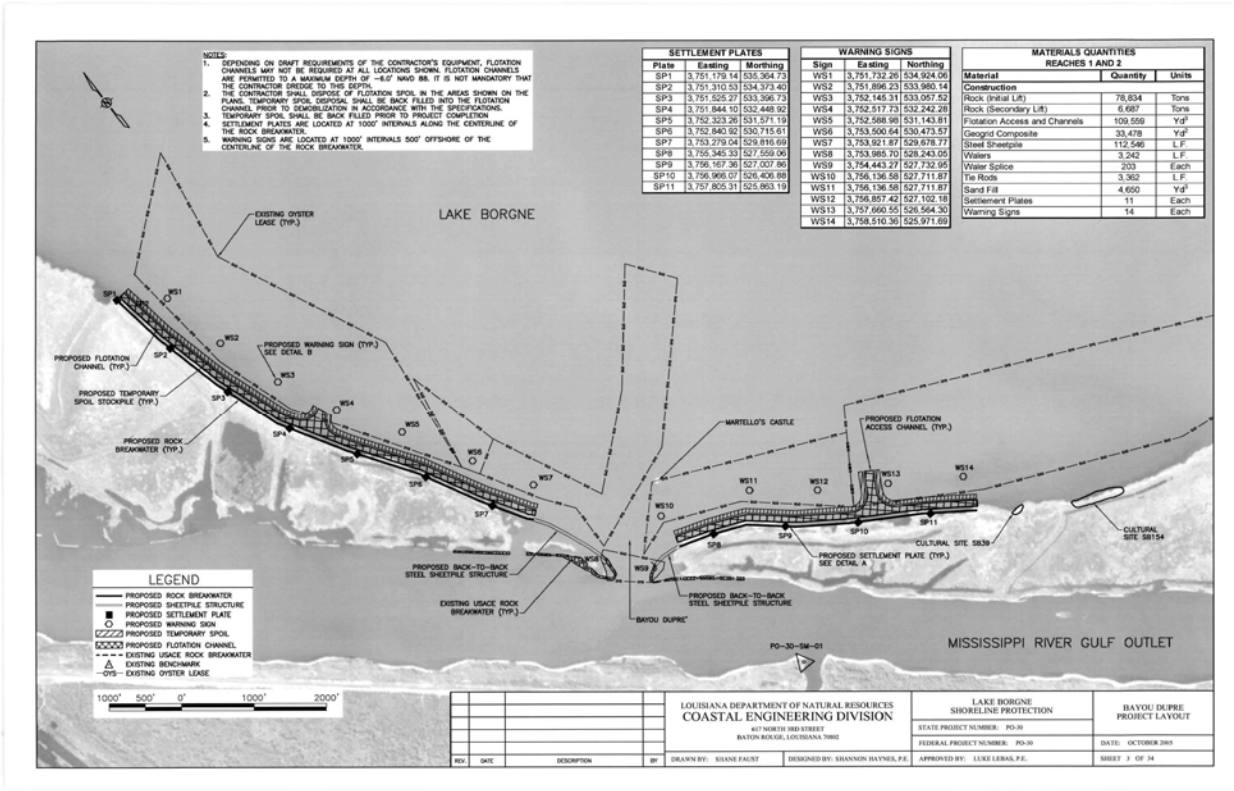
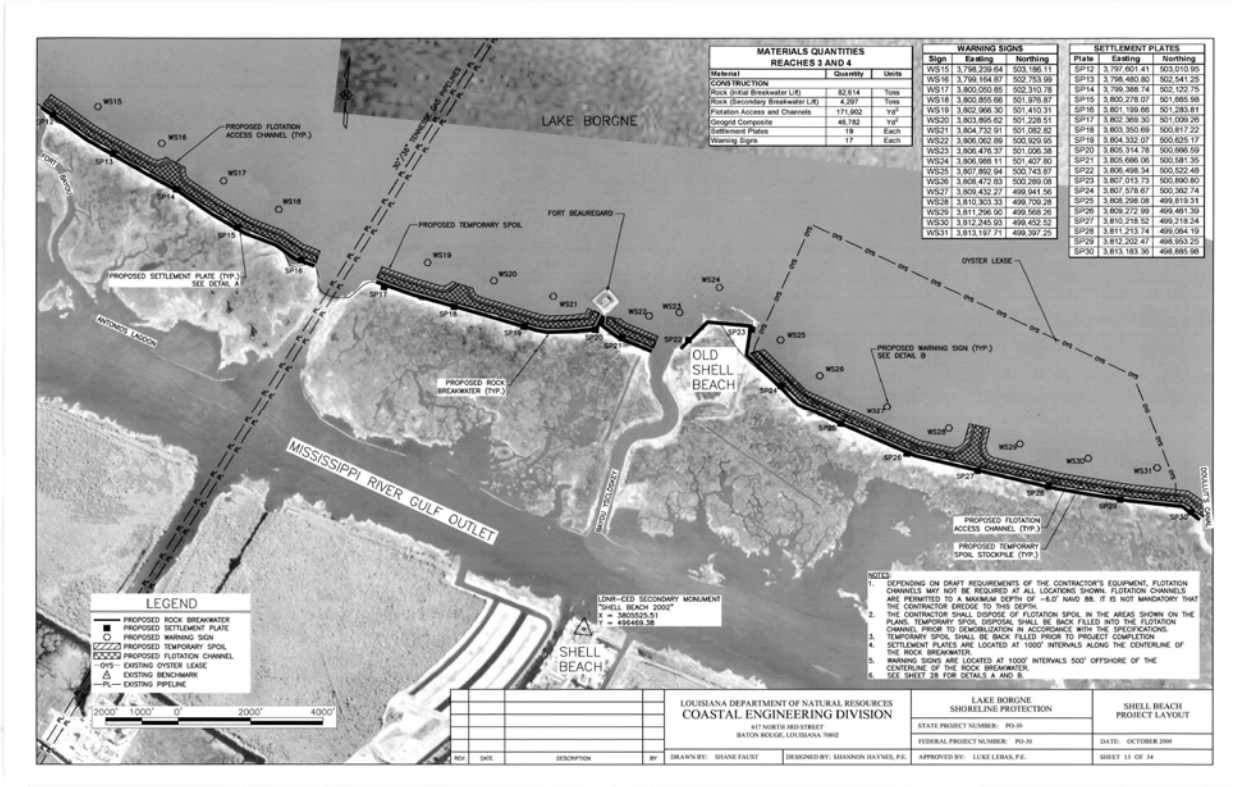


Figure 2 - Bayou Dupre' Project Layout and Breakwater Alignment



MATERIALS QUANTITIES REACHES 3 AND 4		
Material	Quantity	Units
CONSTRUCTION		
Rock (Initial Breakwater Lift)	82,614	Tons
Rock (Secondary Breakwater Lift)	4,297	Tons
Flotation Access and Channels	171,902	Yd³
Geogrid Composite	46,782	Yd²
Settlement Plates	19	Each
Warning Signs	17	Each

WARNING SIGNS		
Sign	Easting	Northing
WS15	3,798,239.64	503,186.11
WS16	3,799,164.87	502,753.99
WS17	3,800,050.85	502,310.78
WS18	3,800,855.66	501,976.87
WS19	3,802,966.30	501,410.31
WS20	3,803,895.62	501,228.51
WS21	3,804,732.91	501,082.82
WS22	3,806,062.89	500,929.95
WS23	3,806,476.37	501,006.38
WS24	3,806,988.11	501,407.80
WS25	3,807,892.94	500,743.87
WS26	3,808,472.83	500,289.08
WS27	3,809,432.27	499,941.56
WS28	3,810,303.33	499,709.28
WS29	3,811,296.90	499,568.26
WS30	3,812,245.93	499,452.52
WS31	3,813,197.71	499,397.25

SETTLEMENT PLATES		
Plate	Easting	Northing
SP12	3,797,601.41	503,010.95
SP13	3,798,480.80	502,541.25
SP14	3,799,388.74	502,122.75
SP15	3,800,278.07	501,665.98
SP16	3,801,199.66	501,283.61
SP17	3,802,369.30	501,009.26
SP18	3,803,350.69	500,817.22
SP19	3,804,332.07	500,625.17
SP20	3,805,314.78	500,996.59
SP21	3,805,686.06	500,581.35
SP22	3,806,498.34	500,522.48
SP23	3,807,013.73	500,890.80
SP24	3,807,578.67	500,362.74
SP25	3,808,298.08	499,819.31
SP26	3,809,272.99	499,461.39
SP27	3,810,218.52	499,218.24
SP28	3,811,213.74	499,064.19
SP29	3,812,202.47	498,953.25
SP30	3,813,183.36	498,885.98

LONR-CED SECONDARY MONUMENT "SHELL BEACH 2002"
Y = 3805525.51
X = 496469.38

NOTES:
1. DEPENDING ON DRAFT REQUIREMENTS OF THE CONTRACTOR'S EQUIPMENT, FLOTATION CHANNELS MAY NOT BE REQUIRED AT ALL LOCATIONS SHOWN. FLOTATION CHANNELS ARE PERMITTED TO A MAXIMUM DEPTH OF –4.0' NAVD 88. IT IS NOT MANDATORY THAT THE CONTRACTOR DREDGE TO THIS DEPTH.
2. THE CONTRACTOR SHALL DISPOSE OF FLOTATION SPOIL IN THE AREAS SHOWN ON THE PLANS. TEMPORARY SPOIL DISPOSAL SHALL BE BACK FILLED INTO THE FLOTATION CHANNEL PRIOR TO DEMOBILIZATION IN ACCORDANCE WITH THE SPECIFICATIONS.
3. TEMPORARY SPOIL SHALL BE BACK FILLED PRIOR TO PROJECT COMPLETION
4. SETTLEMENT PLATES ARE LOCATED AT 1000' INTERVALS ALONG THE CENTERLINE OF THE ROCK BREAKWATER.
5. WARNING SIGNS ARE LOCATED AT 1000' INTERVALS 500' OFFSHORE OF THE CENTERLINE OF THE ROCK BREAKWATER.
6. SEE SHEET 25 FOR DETAILS A AND B.

Figure 3 - Shell Beach Project Layout and Breakwater Alignment

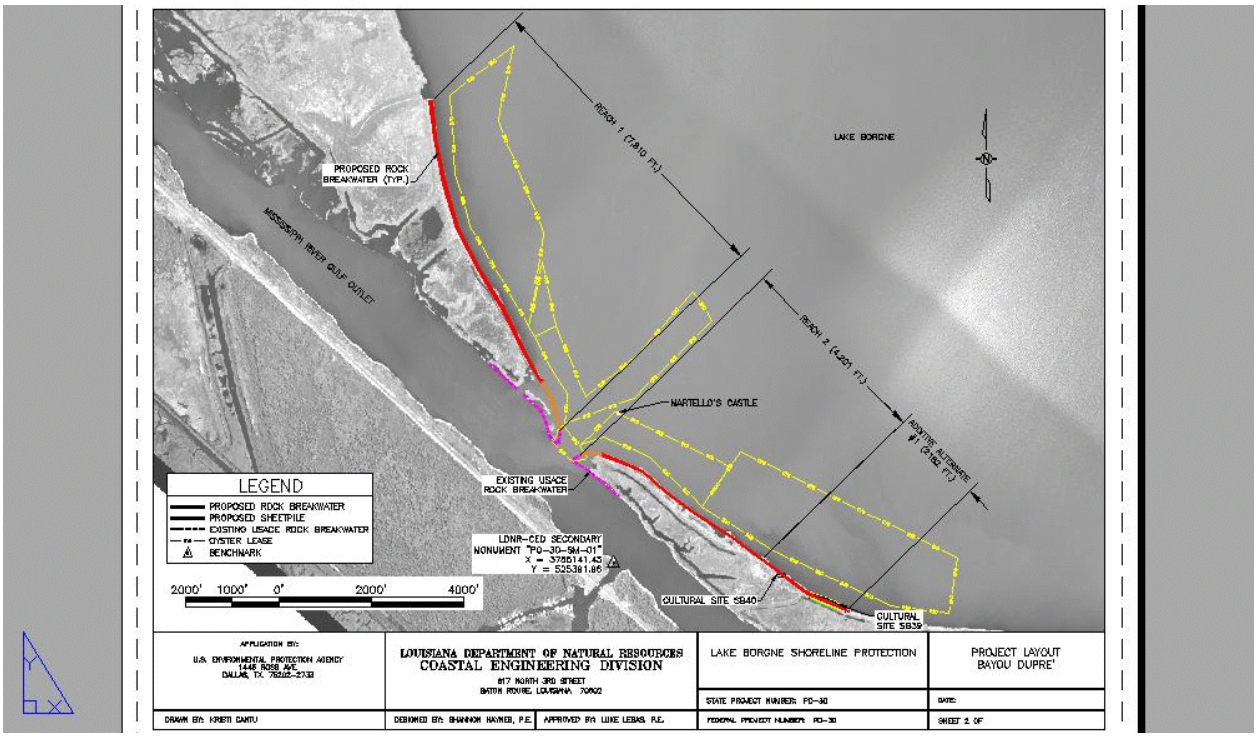


Figure 4 - Bayou Dupre' Additive Alternate #1 (removed from final design)

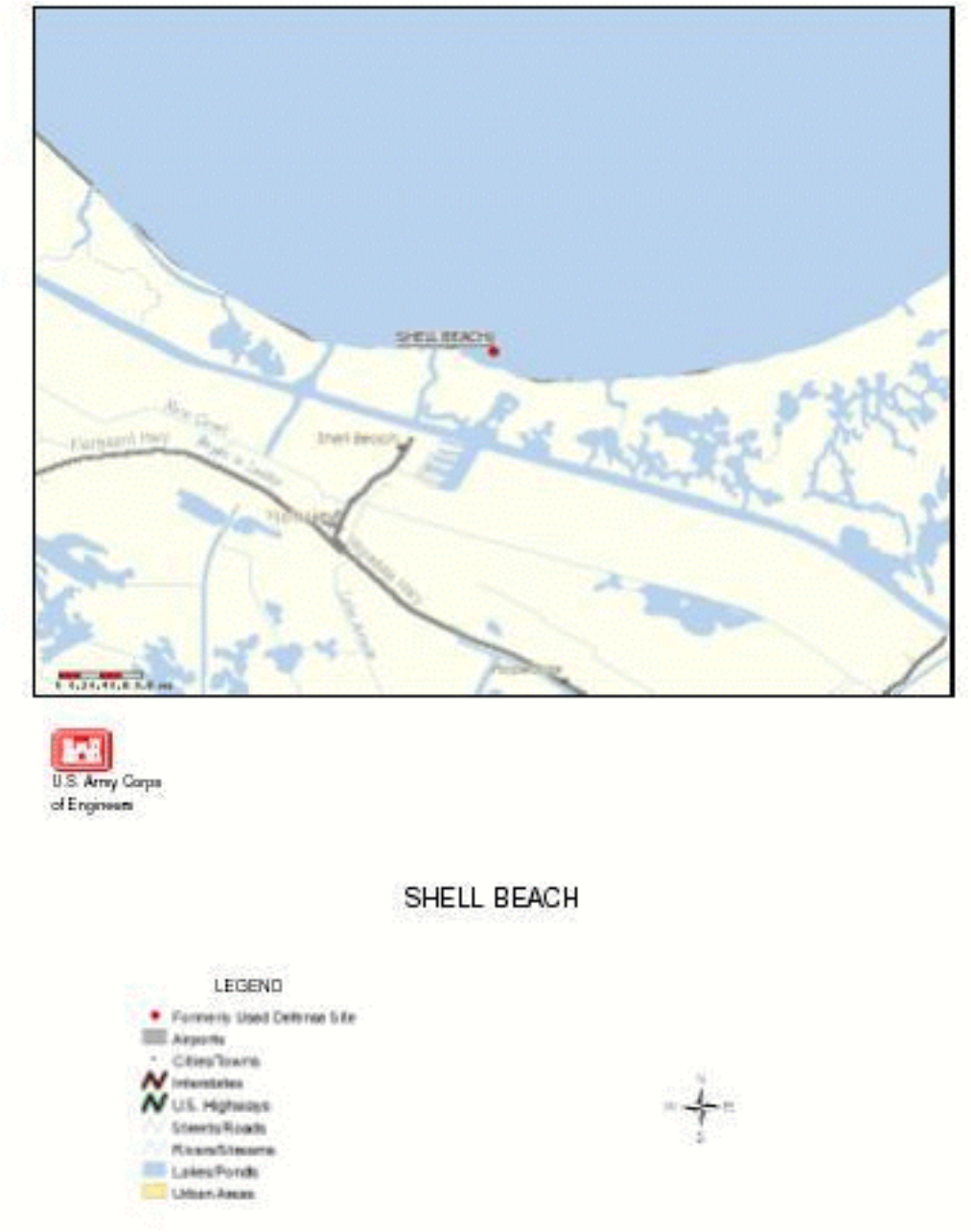


Figure 5 - Shell Beach Formerly Used Defense Site

List of Comment Letters, Memorandum and E-mails

Letters of May 15, 2001, State of Louisiana, Louisiana Department of Transportation and Development, Floodplain Insurance Manager

Letters of May 31, 2002, State of Louisiana, Louisiana Department of Transportation and Development, Floodplain Insurance Manager

Letter of May 22, 2001, U.S. Natural Resources Conservation Service

Letter of July 3, 2002, U.S. Natural Resources Conservation Service

Letter of September 27, 2002, U.S. Natural Resources Conservation Service

Letter of May 24, 2001, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service

Letter of June 12, 2002, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service

Letter of May 30, 2001, State of Louisiana Department of Natural Resources

Letter of July 23, 2002, State of Louisiana Department of Natural Resources

Letters of June 5, 2001, U.S. Fish and Wildlife Service

Letters of May 30, 2002, U.S. Fish and Wildlife Service

Letter of June 25, 2001, Louisiana Office of Cultural Development, State Historic Preservation Officer

Letter of June 19, 2002, Louisiana Office of Cultural Development, State Historic Preservation Officer

Letter of August 20, 2004, Louisiana Office of Cultural Development, State Historic Preservation Officer

Letter of June 19, 2003, Department of the Army, New Orleans District, Corps of Engineers

E-Mail of August 16, 2005, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service

8.0 REFERENCES

Caffey, R.. and Leblanc, B. *Closing the Mississippi River Gulf Outlet: Environmental and Economic Considerations.*

CWPPRA Environmental Work Group. December 20, 2001. *(PO-29/30) Lake Borgne Shoreline Protection at Shell Beach Candidate Project Information Sheet for Wetland Value Assessment.* EPA.

CWPPRA Environmental Work Group. November 2000. *(PO-11-1) Lake Borgne Shoreline Protection at Bayou Dupre' Candidate Project Information Sheet for Wetland Value Assessment.* EPA.

CWPPRA Environmental Work Group. November 2005. *(PO-30) Lake Borgne Shoreline Protection Project Information Sheet for Wetland Value Assessment.* EPA

Environmental Assessment (EA) #402, Lake Borgne – Mississippi River-Gulf Outlet (MRGO) Shoreline Protection Project (PO-32). St. Bernard Parish, Louisiana.

Environmental Assessment (EA) #152, Bank Stabilization, Miles 50.5 to 55.0, Mississippi River-Gulf Outlet (MRGO). St. Bernard Parish, Louisiana.

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1998. *Coast 2050: Toward a Sustainable Coastal Louisiana.* Louisiana Department of Natural Resources. Baton Rouge, LA.

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1999. *Coast 2050: Toward a Sustainable Coastal Louisiana.* Appendix C - Region 1 Supplemental Information. Louisiana Department of Natural Resources, Baton Rouge, LA.

Louisiana Coastal Restoration Plan, Pontchartrain Basin Appendix A 1993

Warren, Daniel, 2004, *Phase 1 Terrestrial and Submerged Cultural Resources Survey Report of Proposed Bank Stabilization Lake Borgne Project at Shell Beach and Bayou Dupre'*. St. Bernard Parish, Louisiana, Neel-Schaffer, Inc.,Lafayette, Louisiana.

Wicker, K.M. et al. 1982. *St. Bernard Parish: A Study in Wetland Management.* Coastal Environments, Inc., (Contract No. 168-909), Baton Rouge, Louisiana. 132pp.

Works Project Administration (WPA), 1941 , *Louisiana: A Guide to the State*. Compiled by workers of the Writers' Program of the WPA in Louisiana. American Guide Series. Hastings House, New York.